

**Safety Alert No. 338**  
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## Pressure Safety Element (Rupture Disk) Failures



*Ruptured burst disk from a BSEE 2012 Panel Investigation Report.*



*Burst disk held against bright sky shows holes (small white dots). The holes were found during a recent BSEE inspection.*

Recent BSEE inspections in the Gulf of Mexico (GOM) have found Pressure Safety Elements (PSEs), also called “burst disks” or “rupture disks,” that were ruptured or severely corroded.

A 2012 BSEE Panel Investigation Report from the Pacific Region called attention to PSEs not being properly inspected and maintained. The Panel Investigation Team concluded that the failure of a PSE on a surge tank initiated the release of hydrocarbons into the flare header, resulting in oil being inadvertently released into the ocean via the disposal tube and the flare stack. Employees who had worked on the platform for several years could not recall ever inspecting the PSE.

BSEE inspections continue to reveal instances where PSEs are found to be hazardous. In the past year, BSEE inspections in the GOM have found additional instances where PSEs were ruptured or severely corroded and often without equipment tags. During one inspection, four PSE tags were missing or illegible, and three PSEs had incorrect burst pressures recorded in the facility records.

In rare instances, PSEs are permitted by regulations. It should be noted that PSEs installed as operator-use-only devices should also be maintained so that no harm to safety or the environment occurs.

**Therefore, BSEE recommends that operators consider the following:**

- Review this Safety Alert with all personnel responsible for inspecting PSEs to call attention to the importance of properly maintaining critical equipment and the importance of frequent mechanical integrity program assessments to ensure effectiveness.
- Operators are encouraged to check the integrity of the PSEs currently installed on their facilities to determine if immediate repair/replacement is needed.
- Check the equipment tags on all PSEs:
  - Tags should be securely attached, legible and up-to-date. These tags are a regulatory requirement under 30 CFR 250.841(a), 250.851(a)(3) and the ASME Boiler code (as incorporated by reference).
  - Tags should list the equipment ID, burst pressure and disk manufacture date.
  - Verify tags against facility records.
  - Take a photo or rubbing of new tags before installation to keep on file, along with manufacturer's documentation.
- Visually inspect rupture disks at intervals recommended by the manufacturer, at a minimum.
  - Inspection intervals may depend on service conditions, pressure and temperature cycling, vibration, and likelihood of corrosion.
  - During inspection, keep the disk in the holder, if possible. Some disks (e.g. pre-torqued rupture disk holders) must be replaced if the disk is removed.
  - Create or revise policies and schedules for burst disk inspections and maintenance, including Safety and Environmental Management System (SEMS) mechanical integrity documents.
- Monitor process conditions, including meter volumes, for evidence of ruptured or leaking PSEs. In some applications, rupture disks may burst without obvious indication to operators.
  - Monitor vent and flaring flow rates for unusual increases.
- Consider replacing rupture disk after a specific length of service, even if they appear to be serviceable. Follow the manufacturer's recommendations.
- Pay close attention to the manufacturer's instructions when installing rupture disks.  
Before installation:
  - Check new rupture disks for damage, corrosion and paint overspray.
  - Verify correct disk orientation per manufacturer's guidance.
  - Ensure that the rupture disk material is compatible with the service.
  - Isolate, shutdown, blowdown and/or lock-out/tag-out as necessary.
- Store spare rupture disks carefully to prevent damage.
  - Do not stack heavy objects on top of rupture disks.
  - Avoid paint overspray as it can increase the burst pressure.

**A Safety Alert** is a tool used by BSEE to inform the offshore oil and gas industry of the circumstances surrounding an accident or near miss. It also contains recommendations that should help prevent the recurrence of such an incident on the Outer Continental Shelf.